Reprinted from the JOURNAL OF NERVOUS AND MENTAL DISEASE. May 1, 1892.

CASES OF UNUSUAL FORMS OF SPASM REPORTED FROM THE CLINICS OF S. WEIR MITCHELL, M.D.[1]

BY CHARLES W. BURR, M.D.

CHOREAL FITS CAUSED BY VOLUNTARY MOTOR ACTS.

CASE I.—D. B. C., male, aged sixteen, student, American.

Family History.—Parents and only living brother are in good health. So far as can be learned, there have been no cases of mental or nervous disease in the family. The father, a school teacher, is a man of excellent habits.

Personal History.—Patient was perfectly well until eighteen months old, at which time he had scarlet fever, during convalescence from which he had one convulsion. His health remained good until present trouble began, five years ago. At that time, without apparent cause, without any shock or over-strain, he grew nervous, irritable, impatient, and easily angered. For some months the pulse remained at ninety beats to the minute, and temperature usually one degree above normal. Appetite voracious but not perverted. Soon his father noticed that on starting to walk and on changing gait from walking to running, his legs would momentarily stiffen at the knees. Sometimes on beginning to speak to his teacher, and on rising from a chair, "his arms would jerk and fly about involuntarily." These attacks increased in frequency, extent, and severity, until after about one year they assumed the character described below. Soon after the onset of the trouble, circumcision was performed for phimosis. There had been no genital irritation nor interference with urination. The operation did not influence the attacks. He has been treated several times, for from four to six weeks, with potassium bromide in unknown quantities, always with excellent result in diminishing the number of attacks, but with such attendant mental depression as to prohibit continuance of the treatment. Electrical treatment greatly di-

[1] Read before the Philadelphia Neurological Society, Dec. 28, 1891.

minished the number of attacks for a time, but finally failed.

Present State (December 21, 1891).—Weight 127 pounds. Height, 5 ft. 7¾ in. Muscular development good. Color good. Skin leaky, especially after excitement. Abdominal and thoracic organs normal. Urine normal. Mental condition excellent. No evidence of the hysterical constitution. No history nor evidence of masturbation.

Station with eyes open nearly motionless, with eyes shut slight sway, one and one-half inch forward and to the right. The walk is slightly altered, there being a rather sudden lift from the heels. Knee-jerk, elbow-jerk, cremasteric, and abdominal reflexes very much increased. In arms and legs the muscle-jerks are marked, without humping, at the points percussed. Front tap is present from the knees down. Ankle clonus slight, say seven oscillations, after which a minute or two must intervene before it can be again developed. Sensation to touch, pain, heat and cold normal. No tremor is present either at rest or when arms or legs are extended. No ataxia on movement. The handwriting is slightly tremulous. The spine is without deformity, and there are no areas painful on percussion.

Dr. de Schweinitz reports: Pupils normal. Both optic discs slightly œdematous and margins veiled. Refraction H. No lesions of choroid or retina. Fields normal.

The attacks vary greatly in extent. Often there is only a momentary shrugging of the shoulders, slight to and fro movements of the arms, and a sigh, reminding one of habit chorea. These occur often when sitting quietly, and may be due to mere restlessness. At other times wild, jerky, choreic movements start in the arms or legs (in the attacks seen by me—Dr. Mitchell—always in the left arm), and soon become general. The patient seizes one arm with the other hand, bends forward, sways from side to side, grimaces, and sinks slowly to the ground. If he be holding something in the hand at the time of onset, he is able to shift it to the other hand and put it on the table. He is never thrown to the floor. Consciousness is unaffected. Duration about one minute. There is some flushing of the face. The tongue is never bitten. For a few seconds before the onset he has a "curious sensation," as he calls it, which he cannot more closely describe. The following attacks were seen by me (Dr. Mitchell). The left hand in wild athetoid motion, but opening and closing. Instantly the right hand fol-

lowed and there were general movements in which he bent over into extreme flexion. In another attack he grasped the rung of his chair, being seated, and bent forward. Again, in another attack, while walking, there were the general movements with violent bending forward, until he crouched on the ground, and at the end was kneeling on one knee. There is no globus nor clavus. The attacks vary in frequency from forty in a day to none in three weeks. Rising from a chair, or starting to walk, is most apt to precipitate an attack. But this is an inconstant cause. The longer he has been seated the more apt is he to have an attack, and it begins usually at the moment the first effort is made to rise. Emotion of any kind seems to be without influence, and attacks are as apt to occur when he is alone or not watched as at other times. So far as known, no convulsive disturbance has ever occurred during sleep. His father states that the attacks are least frequent in the spring and summer, and most frequent in the autumn and winter. We have several times tried to induce an attack by muscle-strain in the manner described by Drs. Dercum and Parker, but without success. Attempts to hypnotize the patient have always failed. While receiving strychnia in ascending doses up to one-twentieth of a grain, t. i. d., at the Infirmary, the attacks markedly increased. Under thirty grains of bromide, t. i. d., the number fell remarkably, but he got into a state of irritable depression.

Remarks by Dr. Mitchell.—The manner of motion in these spasms is distinctively choreic. If the convulsions were continuous, the case would be labeled chorea major by any neurologist. It is worthy of note that it is the beginning of a willed action which gives rise to the worst fits, or else these occur during changes in a volitional action, as when he quickens his steps while walking. No attacks occur when recumbent or at rest, nor can they be then evolved by any act or excitation. Again, there is absolute clearness of head despite the enormous number of fits. The intellect, indeed, is of unusual excellence, memory very good; in a word, no least sign of the mental changes which incessant epilepsies occasion. Neither is there in the sensory sphere any sign of hysteria, and the courage with which he smilingly bears his disorder

is most remarkable. There is no mental nervousness, no emotional fullness, while the color-fields remain normal. There is here no evidence of cerebral lesion. Chorea as violent as this, if of cerebral birth, would probably occasion some of the mental disorders apt to be seen in bad chorea of youth. There are, however, the plainest manifestations of spinal disease—double clonus, front tap, excited reflexes, and imperfect gait.

It appears to me that we may have in this lad a case of true spinal spasm. In other terms, he has spasms which may be spontaneous discharges from spinal ganglia. So that a slight motion of a leg, usually the left, may be all of the fit. But when a volitional order to rise from a seat is passing through the cord, it gives rise to disorderly movements on a large scale. These resemble chorea in their quality. Each onset is a fractional chorea and has no apparent resemblance to either an hysterical or an epileptic seizure. I have seen many epilepsies in which consciousness seemed to be preserved, but in a large majority of these there was found to be either a moment of lost consciousness or a mild blurring of consciousness. The undoubted cases were sometimes hysterical, but with all proper exclusions made, there remained a few cases in which, with typical and even violent epilepsy, there was full consciousness; but the present case lacks all the usual qualities of epilepsy and has an interesting likeness to the singular choreas which we described (in a paper read before the American Neurological Association in 1890) as probably of spinal parentage, like those of the dog. Certainly they are not epileptic; and either we must class them as cerebral-choreal fits, or as spinal-choreal fits.

CASE II.—M. P., aged forty-eight, tailor, German-Hebrew, married, applied at the Nervous Infirmary, Dec. 21, 1877. At that time there was constant and rapid pronation and supination of the left hand, flexion and extension of the forearm, and slight rotation of the entire member around the shoulder. On attempting to hold an object in the affected hand, it would be thrown over

his head. While sitting, the legs were quiet; but voluntary movements of the left caused spasm in it and increased that in the arm. Violent voluntary movements of the right arm or leg produced the same effect. He could not stand with eyes shut. He alleged that sitting on the hand was the only way in which he could prevent the movements in it. He attended the dispensary for a time, and then was lost sight of until May, 1891, when he returned, complaining of difficulty in walking and of violent involuntary movements of left arm.

Family History.—Father died of "cancer of the liver;" mother of old age. Eight brothers and sisters living and healthy. Seven died in infancy. There have been no cases of mental or nervous disease in the family.

Personal History.—Previous health good. Venereal disease denied and no evidence of it obtainable. Habits alleged to be good. He dates his present trouble from an attack of "bilious fever," which he had in January, 1877. A few months later he had pneumonia, and one morning, shortly after recovery, he awoke, after sleeping in a draught, with pain in the left arm and leg. He noticed, also, that the left leg dragged a little, and that involuntary movements appeared in the arm. He recovered, to a great extent, but being shocked by seeing his daughter faint in church, he rapidly grew worse again, and his legs became so weak, as he says, that he was confined to a wheel chair. He could move his legs in bed perfectly, but could not stand. He remained in this condition seven years. A friend then told him of a man similarly affected, who could walk backward. He tried this method of progression, and, finding it successful, adopted it. Some friends sent him to Germany, where, under treatment which seems to have been entirely mental, he improved greatly. Sometime later he underwent another shock, and rapidly lost ground again, but never entirely lost power of walking. We have been told by a physician who saw him when his son was desperately ill, that he threw aside his canes, ran about the room and gave as much assistance as an able-bodied man, until in about a half hour the boy died, when he sank into a chair, saying "Now I cannot walk any more."

Present State.—A rather spare, short, fairly-healthy-looking man. Abdominal and thoracic viscera normal. His breath has a curious, sour, disgusting odor, unlike that caused by decayed teeth or indigestion. His teeth, however, are foul and several of them decayed. Sexual

functions normal. Intelligence good. He is emotional, prone to exaggerate symptoms, and likes to be put on exhibition.

There is slight sway with eyes open, becoming marked if they be covered. There is some uncertainty of movement on bringing the index fingers together, and in touching nose or ear with the left hand. On the other hand, he has no difficulty in picking up small objects or in buttoning his clothes. Sensation in all forms is normal. Knee-jerk varies from day to day, sometimes being quite marked, sometimes very slight, but never absent. It is always re-enforcible. Elbow-jerk also varies. There is an attempt at, but no true ankle clonus. Muscle-jerk is quite marked in the arms. The spine is straight, and on pressure there is pain at the level of the second dorsal vertebra. There is at times a coarse tremor of the hands.

He walks with two canes, which he holds straight in front of him, and on which he leans lightly. Except for the shortness of the steps, his gait is quite normal. If the canes be taken from him, he stands swaying slightly, and protests that he cannot move. If one hand be supported, he apparently makes violent efforts to step forward, and finally falls, sometimes quite heavily, but never injures himself. There is no true palsy. While recumbent, he can move his legs forcibly in all directions. At times there is a violent clonic spasm of the left arm, which often becomes general and may throw him violently to the ground. The movements are epileptiform in character. The attacks last about a minute. Consciousness is not affected. They occur always after muscular strain, as, for example, lifting a rather heavy book, or holding the arms rigidly extended, or even trying to quickly touch the nose or ear with the finger, or forcibly shutting the eyes. While formerly the spasm always began in the left arm, it now sometimes commences in the right. While in hospital, spasms could be developed by massage and by hypodermic injections of water. On the other hand, he can feed himself and carry his canes perfectly well. An attack never occurs spontaneously, nor, so far as known, during sleep. On attempting to write, the pencil is grasped tightly, pressed with violence against the paper, a letter or two fairly well written, followed by a few scratches, after which the pencil is thrown away with an air of disgust, and possibly the tremor, which comes on as soon as he takes

it in his hand, develops into a general convulsion. All symptoms become much worse while he is under observation. Attempts at hypnotization failed.

Eye Examination by G. E. de Schweinitz.—External appearance of the eye is normal. The color of the irides is brown, and there is no asymmetry in tint or shade. The pupils are round, equal in size, and the reaction of the irides normal. There are no noteworthy anomalies of the external eye muscles. The cornaes are not anæsthetic. The central vision is deficient, owing to the presence of myopia.

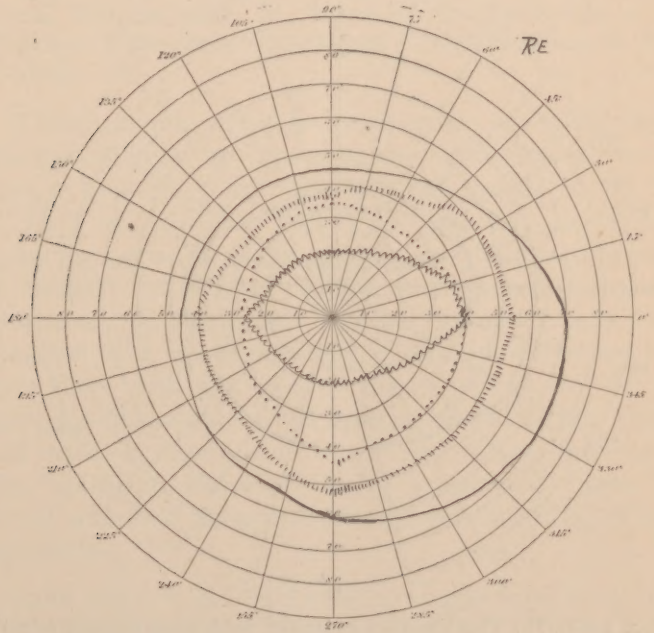

FIG. 1.—R. E.: The continuous line indicates the limit of the form-field; the line of short, vertical strokes, the limit of the blue field; the dotted line, the limit of the red field; and the zigzag line, that of the green field.

Opthalmoscope.—R. E.: Nerve-head nearly round, scleral ring broadened; some deficiency in the capillarity of the deeper layers. The veins are fuller than normal; the arteries, by contrast, slightly contracted. There is general absorption of the pigment-epithelium, exposing the larger vessels of the choroid. L. E.: The nerve-head is oval; the sclerol ring, marked all around and at the tem-

poral side, broadens, with a crescent of choroidal disturbance. The color of the disc is somewhat gray; there is rarefaction of the choroid.

Fields of Vision.—R. F.: There is concentric contraction of the form and color-fields. The colors are appreciated in their normal sequence, except directly above where the red and blue field have the same extent, and directly inward and outward, where the red and the green field are equal in extent. L. E.: There is remarkable contraction of the form and color-fields, and partial

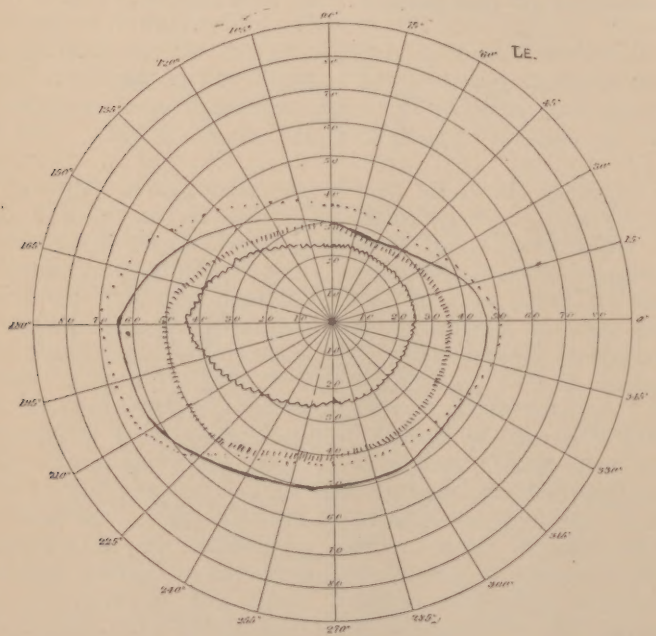

FIG. 2.—L. E.: The lines are as before, indicating respectively the limits of the form and color fields. It will be noticed that in contrast to that of the other diagram, the red for the most part occupies the greatest extent, exceeding in dimensions the form-field.

reversal of the normal sequence. The red field exceeds the limits of even the form-field in all meridians except directly below, where the form-field is the largest. The blue field equals the limit of the form-field above, and is smaller than the red field in all meridians, except below, where it equals it in limit. The green field is in its normal position in the color sequence, but is concentrically contracted.

Remarks.—The appearances of the eye-grounds do not differ from those natural to a low degree of myopia, and the slight grayness of the nerve-heads is not more pronounced than is normal for the patient's age and general coloring. The behavior of the color-fields is similar to other observations which have been made in hysteria. There is no achromitopi, such as Galezouski has reported in hysteria, but there is concentric contraction and partial reversal (on the left side) of the normal sequence in which the primary colors are an appreciated, corresponding to observations which have been made in France by Landolt in Charcot's wards, and in this country by JohnK. Mitchell and de Schwinitz in the wards of the Infirmary Nervous Diseases, and in the practice of Weir Mitchell.

This interesting case is certainly one of male hysteria. The examination of the eyes, the emotionality, the expressive hysterical face, the form and quality of the fits, all leave no doubt. When we consider the nearer-producing agencies of his spasms, we observe that some are sensory, some due due to mental and moral disturbances, and the larger number to motor acts. If I cover his eyes no result follows, but if while erect he shuts them firmly, a violent spasm comes on. In one sense the fits could be classed as choreal. He cannot walk without canes, and when they are withdrawn he falls, therefore his case might be classed under the absurd name of astasia-abasia by persons fond of such ingenuities.

CASE III.—A. S., aged twenty, single, female, no occupation, applied at the Nervous Infirmary, November 27, 1891, complaining of weakness of right leg and left arm, with involuntary movements in the latter.

Family History.—Father killed by accident. Mother died in confinement. Of eight brothers and sisters three are living and healthy; one was still-born, and the others died in childhood. No cases of mental or nervous disease in the family.

Personal History.—Patient was born at term; labor easy, and instruments not used. Healthy until sixth year, at which time it was noticed that she walked on the toes of one foot (which is not known). At about the same time

the left arm began slowly to grow weak. Spinal lateral curvature was noticed at nine years. With the beginning of menstruation, at fourteen, involuntary movements of the left arm appeared on attempting to execute certain movements. This continued and, indeed, grew steadily worse until about four years ago, since which time the member has been to a great extent useless. She has never had a general convulsion, nor an attack of unconsciousness, nor globus hystericus, nor clavus. Her general health has always been good, except for occasional attacks of temporal headache.

Present State.—Small, thin, pale. Hair black; eyes brown. Abdominal and thoracic organs normal. Urine normal. Appetite fair, bowels regular. Menstruation normal.

There is constant coarse tremor of the entire body, except head and tongue, most marked in left arm and right leg. The little finger of the left hand is in constant clonic spasm, the interossei being alternately contracted and relaxed. There is also alternate contraction and relaxation of the hypothenar muscles.

Movements of the right arm are performed without difficulty. On attempting, however, to put the left hand to the head, on holding it rigidly extended, and on carrying an object to the mouth, quite violent choreic movements occur in it, and after a moment it falls to the side. All other movements are performed without difficulty. On extending the right leg and holding it unsupported similar movements occur in it, and may appear also in the arm. Holding the left leg or right arm extended increases the general tremor, but produces no choreic movements. The tremor may be controlled for a moment by effort of will. Emotion increases the violence of both forms of motor disturbance, but never causes an attack. Passive movement will not produce an attack. Sleep is perfectly quiet.

Dyn. R. = 42; L. = 35 (she is right-handed). There is no true palsy, but muscular effort soon causes tire. There is no ataxia; station good. Gait is tottering. The right leg is jerked forward apparently involuntarily, and the toes scrape the floor; but the foot does not drag.

Knee-jerk is much increased on both sides and is reenforcible. Elbow-jerk marked. Muscle-jerk in arms and legs marked. No clonus, no contractures, no wasting, no fibrillary twitching. Sensation in all forms normal. Slight anterior curvature of upper dorsal and

cervical spine. Speech normal. Mental condition good. Emotions rather highly developed. Dr. de Schweinitz reports: Pupils normal, slight retinal haze. Fields normal.

There appears to have been here a sclerotic alteration, perhaps caused by cerebral lesions very early in life. It is difficult to say whether the small, choreal spasms, which in her case follow certain willed efforts, be cerebral or spinal. There is no mental disorder and there is evidence of spinal disease.

CASE IV.—A. C., aged twenty-three, New Jersey, seamstress. Her family, Quaker people, are unusually healthy. She herself was well until her third menstrual flow, which took place late, when over fifteen. Some religious excitement may be credited with the disorder of nervous system which followed. After several hysterical fits of no very grave nature, she was, one day, seized with a spasm on rising from a low chair. Her mother, who saw her, described her as bending over when half risen and as moving hands and feet in a wild and strange way. The attack was to her alarming and was followed by hysterical tears. From this time onward she never rose from the seated posture without a spasm. She could, however, get up from a supine attitude without a fit. When first seen by me, two years later, she was a tall, well-made girl, rosy and plump. Every function was well performed.

Her knee-jerks were excessive, and there was slight clonus in the right foot only. Nevertheless there was no spasticity of gait, and no excessive muscular reaction. Many of her attacks were seen, as she was a long while in the Infirmary. They varied little. As she rose and while the legs were still at a large angle, the attack began. The muscles, beginning to contract, did not prevent the girl from rising to the erect position; but at once the fit became general, and distinctly progressed from below upward, so that the thighs, trunk, belly, and chest muscles were involved in turn, and at last the upper extremities. The fit lasted five to twenty-five seconds, and usually after wild choreic movements, ended in what seemed to be a general contraction of the flexors, and then sudden relief. During the attacks, which, as they always followed effort to rise, I saw often,

she gave evidence of the perfect preservation of consciousness.

No other motion or action was competent to evolve these fits. If while in bed she very abruptly rose, she escaped. If she sat five seconds there was a fit as she rose.

I was unable to help this case and lost sight of it. I have no doubt that it was of spinal origin.

A similar case, but of extreme violence, was reported by me in a paper on "Functional Spasms."[1] These were grouped under three heads: 1. Where a voluntary motion was liable to abnormal exaggeration. 2. Where a normal functional act (muscular) results in limited spasmodic action of remote muscles, not engaged in the original movement. 3. Where standing or walking gave rise to a general disorder of movement. Bamberger describes one of these latter cases, where the contact of the feet with the ground seemed to be the cause of spasm. I have reported a similar case, but I was never sure in my case that the commencing muscular acts due to standing might not have been the true parents of the spasm. Pressure on the soles did not cause spasm while the lad was on his back. Gowers has, too, a case of spasm from the act of rising (p. 990, Am. Ed.).